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DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are sold at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Albizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale; the price per 100 varying from \$1.00 to \$2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haughs, Forest Nurseryman, Box 207, Honolulu, Hawaii.

RALPH S. HOSMER,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief we like and sometimes it is indispensable for us to see the insect suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box specimens may be mailed at 3rd class rates. When specimens are not accompanied by letter *always* write your name and address in the upper left-hand corner of the package. Address all communications SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207, HONOLULU, HAWAII.

EDW. M. EHREHORN,
Superintendent.

Forestry
Eggs.
Penn. State college
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THE HAWAIIAN FORESTER & AGRICULTURIST

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The Agricultural News (West Indies) for November 25 contains a leading article of two pages on "The Assimilation of Nitrogen by Rice," which consists mainly of a review of Bulletin No. 24 of the Hawaii Agricultural Experiment Station.

A machine for separating and straining lime juice, which costs only \$100 and has a capacity of 300 gallons an hour—equivalent to about forty barrels of limes—has been proved successful at the botanic station, Dominica. It is surprising that the growing of limes, on a commercial basis, is greatly neglected in Hawaii where the demand for the fresh fruit is generally ahead of the supply. Both limes and lime juice ought to be articles of profitable export from these islands.

THE COTTON WORM.

Hawaii was not singular the past year in receiving an invasion of the cotton boll worm, although coming in the nascent period of the revived industry—after suspension of enterprise in that product for more than a generation's lifetime—the blow fell with peculiar force here. A letter to the Imperial department of agriculture, West Indies, from W. D. Hunter, in charge of the southern field crop insect investigations of the bureau of entomology of the United States department of agriculture, stated that a most extraordinary outbreak of the cotton worm (*Alabama argillacea*) had been experienced in the United States during the past cotton-growing season, the cotton fields from Texas to the Atlantic having been completely defoliated. Mr. Hunter was endeavoring to ascertain the sources from which the enormous numbers of these moths had come. He believed that in one case they migrated into the United States along the Mexican coast, and he raised the question as to whether another migration might not have taken place from the West Indies. In answer to this suggestion the Agricultural News says, "It does not seem likely that the West Indies could have furnished any large number of cotton moths during the past two or three seasons, as this insect has not been very abundant, in the Lesser Antilles at least." From articles in American periodicals the News tells of the capture of a number of moths of the cotton worm at Amherst, Mass., and the appearance of myriads of them in Philadelphia, on which Dr. Henry Skinner is quoted as saying: "There were many thou-

sands of them and nearly all that I saw were in perfect condition as though just from the chrysalis. These moths are known to migrate in numbers but it is quite strange if the great numbers seen here came from the cotton districts of the South. The moths in some places appeared to create considerable alarm, people thinking they would cause damage to plant life here."

The Agricultural News observes: "The fact that the abundance of the cotton worm has been observed in these northern latitudes, at the end of the season in which this insect has been so destructive in the South, might indicate that it occurs there as the result of migration directly from the cotton fields. On the other hand, the fact that the moths were remarkable for their perfection and freshness again raises the question as to whether the cotton worm has another food plant than cotton. The answer to this question would be of considerable interest to West Indian planters for, although uncultivated or wild cotton furnishes food for the cotton worm and thus helps it to survive periods when no cultivated cotton is being grown, it is obvious that additional food plants would be of value to the cotton worm during this unfavorable period." The problem thus raised would appear to be pertinent to the matter of the visitation Hawaii has experienced.

Clean culture is a living issue elsewhere than in Hawaii. Our tropical agriculture exchanges from opposite sides of the world—the Orient and the Antilles, as well as Europe—are devoting much space to insecticides and methods of their application, and admonitions to destroy all infected fruits are also becoming general.

Among the latest outcomes of governmental assistance in the marketing of small farming products in this Territory, in charge of S. T. Starrett, is the coöperation of dairymen in the Hilo district for the establishing of a central creamery to supply not only the local but the Honolulu market with fresh butter of first quality. In this connection it is interesting to notice, in a late number of the *Tropical Agriculturist* (Ceylon) a long selected article on the great development of the dairy industry of Denmark through the adoption of just such coöperation. It was instigated in that country by the failure, some years ago, of its corn-growing industry. Now Denmark is exporting millions of dollars worth of dairy products as the direct result of the coöperative creameries.

There is every promise, according to a news article in the *Hawaiian Star*, that Mr. Starrett's market superintending will eventuate in not only restoring the Hawaiian banana industry but developing it to an extent never before approached. One condition of success is of course clean culture, as well as clean and otherwise efficient packing, for which the superintendent is working hand in hand with the other official and private clean culturists.

Rubber seems to be the word everywhere in the tropical world just now, and Hawaii appears to have good promise of keeping its hand in the industry—comparatively small as the beginning here may be. Periodicals of tropical agriculture everywhere, as well as ordinary news prints in tropical countries, are giving much space to technical discussions of rubber growing. Last year, as readers of the Forester are aware, a number of this magazine was devoted mainly to a full report of the annual meeting of the Hawaiian Rubber Growers' Association, and it will also be remembered that the Forester has noted in exchanges, also in a book published in London, very considerable mention of the rubber growing experimentation done in Hawaii. Late mails have brought some articles on rubber, quotable in reasonable compass as well as many too lengthy for these pages, and of the former, as space will permit, our readers shall have the benefit.

KEEPING THE BOYS AND GIRLS ON THE FARM.

To keep the farmers' boys and girls in the country is a problem affecting every agricultural district in the United States. The universal opinion of the farmers throughout the country, as voiced to the National Country Life Commission was that the present system of education in the district schools in a large measure is responsible for the exodus of the youth of the country to the city; that the curriculum, owing to its failure to instruct in the spirit of the farm is strongly influencing the children away from rather than toward rural pursuits.

Recognizing fully the importance of the problem of conserving for the country a larger proportion of its young people and of directing them in childhood to appreciate the dignity and independence of farming as a profession, Secretary Fisher of the Department of the Interior has authorized the Reclamation Service to coöperate with the Department of Agriculture, the various state and county authorities, in a practical plan which it is believed will materially promote a solution of this problem on the irrigation projects of the government.

On a number of these projects the old-fashioned, one-teacher district schools have been eliminated and consolidated, or centralized graded schools have been established. Sufficient land has been set aside or donated adjacent to these schools to permit the platting of small tracts for planting. A course in elementary agriculture is to be taught and an actual demonstration of irrigation and cultivation is to be given with prizes for the best results. To further these plans the Reclamation Service will furnish free of charge the water for irrigation; the Department of Agriculture and the State Experiment Station will supply seeds and expert instructors. This western experiment will be viewed with absorbing interest by the farmers all over the land.

THIRD REPORT OF DIRECTOR OF FRUIT FLY CONTROL.

*To the President and Commissioners Board of Agriculture and
Forestry, Honolulu, T. H.*

GENTLEMEN:—I beg to submit a report of the work in re
“Fruit Fly Control” for the month ending January 31, 1912, viz.:

INSPECTION.

Upon request the President authorized me to engage two more inspectors at the beginning of January and in consequence I have been able to thoroughly inspect the areas covered by our outlying Districts 1 and 2 to the west and 7 and 8 to the east of Honolulu.

Last month I reported these sections as badly infested with fruit fly but am now pleased to report that strenuous destruction of infected fruits has shown a marked improvement in all these four districts. Continued inspection in all the precincts of Districts 3, 4, 5 and 6 has met with excellent results. Were it not for a few scattered residents who apparently refuse to coöperate in the clean culture methods adopted by your Board, and some others who throw all the burden of the work of picking and destroying infested fruit upon the inspectors, the present conditions would be still better than they are. On the whole, however, all the districts have been fairly well cleaned up of the ripe fruits, etc., of the season. Among these are principally the Hawaiian orange, Chinese orange, mandarin orange, guava, lime, loquat, carambola, fig, green pepper, coffee berry, kamani seed, papaya, eugenia and others. The mango season will be on very shortly, a number of trees already showing large size green fruit. Judging from the flowering and setting of the fruit on the mango throughout this island I should say that the crop is going to be an unusually large one. It will be interesting to see whether or not, because of clean culture methods, the fruit this year will show a diminution of fruit fly attack over that of last year. As previously stated, were it not that there are residents scattered throughout each precinct who cause continued inspection on their premises and fail to coöperate, the chances of re-infestation would be minimized. With such doubtful conditions, however, the re-infestation of small areas may, during the mango season, cause altogether unnecessary fruit fly conditions in adjacent sections. Many poor tenants of the smaller fruit and vegetable gardens have given us much extra work because of their inability to secure and pay laborers to gather and destroy quantities of infected fruits and vegetables. In such cases as these I have had to double up the inspectors so that these might assist such tenants in picking and carting away quantities of the infested material to the incinerator.

FINANCES AND PAY ROLLS.

Since my last report advices have been received from the State Horticultural Commissioner of California that the sum of \$4000 was available from his appropriation for the period ending July 1st for the purpose of employing inspectors. Your director has satisfactorily arranged with Mr. Weinland, the representative of said Horticultural Commissioner, a system whereby the expenditure of the California funds will be kept separate from that made from our own appropriation. An accounting from this special fund represented by the pay roll, will be forwarded by Mr. Weinland to the California authorities monthly. As it is particularly required that these special expenditures shall not include incidental expenses these latter will have to be expended from our own appropriation. The incidental expenses, which so far have been principally for printing, advertising and office supplies, will from now on be largely increased as it will undoubtedly be necessary to do considerable hauling of fallen fruit from certain districts to the incinerator. The districts referred to are of course those situated outside of the County garbage limits. In view of the above facts our own pay roll will show a proportionately less number of inspectors than that of California, but on the other hand the incidental expenses will, for a season, be much larger than heretofore. Since my last report two additional inspectors have been appointed, the total number on February 1st being 8. Five of these are on the California pay roll and three on our own.

BREEDING EXPERIMENTS.

Since last report the Entomological Department has succeeded in breeding the Mediterranean fruit fly from the fruit of carambola and brown persimmon. In the latter case a single fruit was handed us, it having been the only one maturing on a newly introduced species. The above fruits therefore may now be added to the long list of those which we have found to be attacked by Mediterranean fruit fly.

THE PEST ON HAWAII.

I am sorry to report that on the 31st we bred out the Mediterranean fruit fly from Chinese oranges which I received from a resident in the Kohala district on Hawaii. This is the first authentic knowledge we have of the absolute establishment of this fruit fly on that island although we have of course known that the common Melon fly, which has been in the Territory for so many years, was established on all the islands. The fact that the Mediterranean fruit fly is now already in one district and possibly in others on Hawaii will make the system of inspection at ports of destination a much more laborious one as "clean cul-

ture" methods, together with a systematic district inspection will have to be added to that which was originally contemplated. This also applies to Molokai and Kauai where I reported a while ago that the fruit fly had already become established. So far we have not received any questionable material from the island of Maui although it may be possible that the fly has established itself there as well as on the other islands. It is to be regretted that no funds were available to start the insular port inspection when it was first suggested by me two or three months ago. Failing a sufficient appropriation to efficiently carry out such necessary inspection work as was required to keep the other islands free from infestation I made an appeal to certain people who are largely interested in diversified industries on Maui and Hawaii with a view to having them "get together" and provide funds to meet the necessary expenses incurred for this insular port inspection. This appeal was made verbally and in writing some weeks ago but so far I have heard of no serious organization on the part of these agriculturists. As regards the infestation in the Kohala district I would state that I am writing to a prominent resident in that district informing him of the methods to be adopted to keep all fallen and infested fruit picked and thoroughly destroyed daily. I shall also ask him to give as much publicity to the instructions sent as is possible in a country district. It is quite possible that if the infestation is confined to Kohala and is of only recent occurrence radical measures such as stripping of all fruit trees including wild guava may delay its advent in other districts on Hawaii. Certain fruits sent us from Kona and Hilo have so far failed to breed out the Mediterranean fruit fly although there is one very questionable case which, when the breeding is complete, may prove to be an infestation of the Kona district. It is, however, somewhat early to predict on this particular case.

Respectfully submitted,

W. M. GIFFARD,
Honorary Member of Entomological Committee.

BOARD OF AGRICULTURE AND FORESTRY.

Minutes of a meeting of the Board of Commissioners of Agriculture and Forestry held in the Senate Chamber, Capitol Building, Honolulu, on Monday, January 8, 1912, at 2 o'clock p. m.

Present—Charles S. Judd, President and Executive Officer; J. M. Dowsett, H. M. von Holt and Albert Waterhouse.

Mr. Judd among divisional reports presented the supplementary report of Mr. Hosmer of the Division of Forestry in reference to the verbal application of Mr. Eben Low for an extension of time under his agreement with the Board to remove all sheep and goats from the island of Kahoolawe. After a general discussion in which it was stated that the weather at this season of the year might prevent Mr. Low from accomplishing the work within a shorter period and that the Board would prefer to allow ample time in order to be certain that all sheep and goats would be removed, it was moved by Mr. Dowsett that the extension of time be allowed to Mr. Low until April 30, 1912, to remove all sheep and goats; the motion was seconded by Mr. von Holt and on vote unanimously carried.

Rule on Rabies.

Mr. Judd presented Rule VI, which had been returned by the Governor with an alteration permitting the importation of dogs without quarantine restrictions from countries where rabies does not exist. Mr. Judd stated that the Governor had given as his reason for altering the rule that it would be unconstitutional unless such modification was made.

After a general discussion in which several changes of the rule were suggested it was moved by Mr. Dowsett and seconded by Mr. Waterhouse that the Committee on Animal Industry be directed to take the matter up with the Governor and ascertain in just what way Rule VI would be unconstitutional if passed without the change made by the Governor, and that the Committee on Animal Industry draw an entirely new rule which would cover all possible points and submit it at the next meeting of the Board. On vote the motion unanimously carried.

Rule on Thimbleberry.

Mr. Judd presented a draft of Rule XIII to control the plant pest, Thimbleberry, and read same to the Board. In general discussion it was decided that the rule should be drawn to restrict the carrying of the plant between any of the different islands, and upon motion of Mr. Dowsett, seconded by Mr. von Holt and unanimously carried, the President and Executive Officer was instructed to take the matter up with the Attorney-General and the Governor and prepare a sufficient rule and submit to the Board.

Fruit Fly Control.

The report of Mr. Giffard, Director of Fruit Fly Control, was presented by Mr. Judd and read. Mr. Dowsett and Mr. von Holt remarked upon the efficiency of the work and stated that in their opinion Mr. Giffard was to be specially commended. Mr. Dowsett said that the question of the State of California contributing to the funds for this campaign had not yet been definitely settled but it was hoped that money from this source would soon be available and that it would then be possible for Mr. Giffard to enlarge his working force and accomplish more than he could with present funds.

On motion of Mr. Waterhouse, seconded by Mr. von Holt and on vote unanimously carried the report was accepted and ordered to be filed.

Mr. Judd stated that the Forestry Committee was not ready to report upon the Forestry plan for Honolulu Plantation and would require further time.

Application to Cut Honohono Grass.

Mr. Hosmer stated that he had received an application from Mr. E. O. Farnham for permission for his brother, T. F. Farnham, to cut honohono grass on Tantalus. It was stated by Mr. Hosmer that some time ago the Board had prohibited the cutting of grass on Tantalus and it did not now seem advisable to allow it to be done. On motion of Mr. von Holt, seconded by Mr. Waterhouse and on vote unanimously carried it was decided to take the matter up at the next meeting of the Board.

Minutes of meeting of Board of Commissioners of Agriculture and Forestry, held in the Senate Chamber, Capitol Building, Honolulu, January 25th, 1912, at 2 o'clock p. m.

Present—Charles S. Judd, President and Executive Officer; Paul R. Isenberg, J. M. Dowsett, H. M. von Holt and Albert Waterhouse, members; R. S. Hosmer, E. M. Ehrhorn and V. A. Norgaard.

Honohono Grass.

Mr. Judd requested action of the Board regarding the cutting of honohono grass on Tantalus and after general discussion it was moved by Mr. Isenberg and seconded by Mr. Waterhouse that the former action of the Board prohibiting the cutting of honohono grass remain unchanged. Upon vote unanimously carried.

Mr. Judd presented a report of the Entomological Committee, dated Jan. 22, 1912.

ANIMAL QUARANTINE STATION AT HILO.

Mr. Judd presented a recommendation by the Finance Committee that owing to a lack of funds the building of the proposed animal quarantine station at Hilo be not undertaken during the present fiscal year, but that if possible a special fund be allotted for the purpose when the next regular allotments from the Conservation Fund of the Board are made.

Upon motion of Mr. Isenberg, seconded by Mr. von Holt and on vote unanimously carried the recommendation was adopted by the Board.

The Thimbleberry Rule.

Mr. Judd presented and read Rule XIII in full. Upon suggestion of Mr. Waterhouse and Mr. Dowsett slight amendments were made to the draft and on motion of Mr. Dowsett seconded by Mr. Waterhouse and on vote unanimously carried the amended draft was approved by the Board and the Executive Officer instructed to submit the rule to the Governor for final approval.

Fruit Fly Control.

Mr. Judd presented a letter which he had prepared to be sent to A. J. Cook, California State Commissioner of Horticulture, in regard to Fruit Fly Control work and asked the Board for its approval thereof. After a lengthy discussion as to clean culture and manner of enforcement of Rule XIII and the probable effect of action or lack of action upon the fruit industries of the islands it was moved by Mr. Waterhouse and seconded by Mr. Isenberg that the Entomology Committee take the matter up with full authority to act. Upon vote unanimously carried.

Rule on Rabies Adopted.

Mr. Judd presented Rule VI in final form and read same in full. Upon motion of Mr. Waterhouse, seconded by Mr. Dowsett and on vote unanimously carried Rule VI was approved and the Executive Officer was instructed to submit same to the Governor for approval and signature.

DIVISION OF FORESTRY.

Honolulu, Feb. 10, 1912.

*Board of Commissioners of Agriculture and Forestry,
Honolulu, T. H.*

GENTLEMEN:—I have the honor to submit herewith the routine report of the Division of Forestry for the month of January, 1912:

Forest Reserve Matters.

During the month I made several short field trips in connection with matters of locating forest reserve boundaries and fencing. The localities visited were Palolo and Nanakuli Valleys and the land of Aiea, Oahu, and that portion of the land of Kehena 2, Kohala, Hawaii, for which the Government has instituted condemnation proceedings. On this last trip, January 9-12, the party consisted of Mr. Arthur G. Smith, Deputy Attorney General, who is conducting the case for the Government, and Mr. L. von Tempsky of Maui, who went along to give expert testimony as to the value for ranching of the area in question.

Early in the month Mr. Haughs and I made a hasty visit with Mr. A. W. Van Valkenberg, to his forest plantation at Kunia, Oahu, where groves of a number of species of Eucalypts are making excellent growth. In time this plantation should yield large quantities of wood and timber.

During January progress has been made with a project to plant forest trees on the portion of the Government land of Aiea that lies within the Ewa Forest Reserve, the actual work to be done by the Honolulu Plantation Company under a coöperative agreement whereby the plantation will later be reimbursed in fuel wood for the money expended in the planting.

Plantation Tree Planting.

The Division of Forestry continues to send out considerable numbers of forest tree seedlings to sugar plantation companies and others doing extensive tree planting. Sixty-eight thousand seedling trees left the Nursery in January for this purpose. For further details in connection therewith Mr. Haughs' report, transmitted herewith, should be consulted.

Botanical Exploration.

Mr. J. F. Rock, consulting botanist of this Division, is still on Hawaii, where he is having a successful collecting trip in the districts of Kau and Kona. He writes that he has secured much additional herbarium material, including some very rare plants, and also that he has collected a considerable quantity of seed of native Hawaiian trees. This is particularly welcome news for these seeds can be used to very good advantage in exchanges with botanic gardens from whom we desire special favors.

Progress is being made on Mr. Rock's proposed book on Hawaiian trees. It is probable that the manuscript can be sent to the printer soon after his return to Honolulu.

Congressional Vegetable Seed.

During January, the Congressional seed received from the Delegate to Congress, was distributed to the public schools and to a selected list of persons on our mailing list. Some packets still remain which may be had upon application at the Government Nursery.

Street Tree Planting.

On the evening of January 30, I read a paper on "Street Tree Planting," before the Out Door Circle of the Kilohana Art League, the members of which have taken up actively the question of civic improvement.

Very respectfully,

RALPH S. HOSMER,
Supt. of Forestry.

REPORT OF THE FOREST NURSERYMAN.

The following is a report of the principal work done during the month of January:

Nursery.

Distribution of Plants.

	In seed boxes	In boxes transplanted	Pot grown	Total
Sold	200	1400	1600	
Gratis	450	1800	4435	6685
	<hr/> 450	<hr/> 2000	<hr/> 5835	<hr/> 8285

Collection on account of plants sold amounted to \$26.85. From the Division of Animal Industry for use of Animal Quarantine Station, \$32.25. Total, \$59.10.

Plantation Companies and Other Corporations.

We have received during the month orders for 12,000 trees and we have delivered 68,000, consisting of different species of Eucalyptus and Ironwood (*Casuarina equisetifolia*).

Experiment Garden, Makiki.

Owing to the heavy demand for trees during the past two or three months our stock for general distribution is considerably reduced, and the men at this station, also at the nursery, have been working on the potting and transplanting of trees to replenish our stock.

U. S. Experimental Planting, Nuuanu Valley.

The two men are kept busy hoeing and clearing away the grass from the trees. More trees are now ready at the Makiki Station for this work and these will be planted during February.

Very respectfully,

DAVID HAUGHS,
Forest Nurseryman.

DIVISION OF ENTOMOLOGY.

Honolulu, Jan. 31, 1912.

*Honorable Board of Commissioners of Agriculture and Forestry,
Honolulu, T. H.*

GENTLEMEN:—I respectfully submit my report of the work of the Division of Entomology for the month of January as follows:

During this month, we boarded 27 vessels and found vegetable matter on 21 of them and two sailing vessels brought sand in ballast which was clean and free from insect life. Careful inspection of all shipments was made with the following result:

<i>Disposal with principal causes</i>	<i>Lots</i>	<i>Parcels</i>
Passed as free from pests.....	610	17,809
Fumigated before releasing.....	32	420
Burned	31	176
Total inspected	673	18,405

Rice Shipments.

18,140 bags of rice arrived during the month and being found free from insect pests was permitted to enter the Territory.

Pests Intercepted.

Among a shipment of plants from Japan we found 100 orange trees which were badly infested with *Cladosporium citri*, *Alcyrodes citri* and a Tineid leaf miner, the trees were confiscated and burned. On a small shipment of Orchids and plants from Java we found some Mealy bugs (*Pseudococcus azaleae*) which were killed by fumigation. Orchids from Manila were over carried to San Francisco and returned here during the month. We found the plants in a very poor condition, nearly all dead from dryness, nevertheless all the soil was removed and the lot fumigated. On another plant shipment from Japan we found many trees badly infested with the White Peach scale (*Aulacaspis pentagona*), a

large Lecanium scale, (*Eulecanium magnoliarum*) and some Brown velvet Lichen, all the trees were burned. Some cotton seed arrived by mail from the United States and was first fumigated before delivery as a precautionary measure against the Cotton Boll weevil (*Anthonomus grandis*).

Hilo Inspection.

Brother M. Newell, Inspector for Hilo, reports the arrival of 8 vessels, 4 of which brought vegetable matter consisting of 107 lots and 2331 parcels; which being free from pests were passed. One 50 bag lot of potatoes was ordered cleaned from soil before delivery.

Inter-island Inspection.

During the month of January 70 steamers were attended to and the following shipments were passed on:

298 bags of Taro.
57 cases of Plants.
5 bags Seed Cane.
2 bags Cocoanuts.

Total..... 362 packages.

The following packages were refused shipment:

28 packages of Fruits.
15 packages of Vegetables.
6 lots of Plants.
1 case of Lilyroot (not cleaned).

Total..... 50 packages rejected or destroyed.

On January 23 one package of grapes was found infested with maggots.

Respectfully submitted,

E. M. EHRHORN,
Supt. of Entomology.

DIVISION OF ANIMAL INDUSTRY.

Honolulu, Feb. 7, 1912.

Hon. C. S. Judd, President and Executive Officer, Board of Agriculture and Forestry.

SIR:—I have the honor to submit herewith the report of the Division of Animal Industry for the month of January, 1912:

Quarantine of Dogs.

The regulation imposing a quarantine of 120 days on all dogs coming from or through a country where rabies is prevalent received the approval of the Governor on January 27th and will go into effect on March 1st.

Pursuant to verbal instructions from the President of the Board I communicated with troop farrier Albert Davenport of Troop N, 5th U. S. Cavalry, who had been highly recommended to me for the position of caretaker of the Animal Quarantine Station. The increased duties of the incumbent of this position, which from March 1st will require the meeting of all incoming steamers and other vessels for the purpose of securing and transporting to the quarantine station all dogs intended for importation has necessitated the employment of a young and active man, and I am pleased to say that I believe the proper party has been found.

I took Mr. Davenport to the station and received from him valuable suggestions in regard to the construction of kennels, kitchen and infirmary for the care and keep of the dogs. I afterwards took him to the office of the president and various members of the Board but failed to find any of them in and as he had to return to Schofield Barracks on the afternoon train I requested that he report to me again as soon as he can obtain the required furlough. Mr. Davenport's retirement, though regretted, has been approved by his regimental officer, and his application has been forwarded to Washington for approval. In case the same should not be returned by March 1st the applicant is entitled to one month furlough for which application has already been made to take effect on March 1st. I feel therefore confident of having his services at the disposition of the Board by the time the rabies regulation goes into effect.

The construction of kennels and paddocks according to plans submitted herewith awaits the approval of the Board, and will be begun immediately, so that safe and comfortable premises may be in readiness to receive the dogs which may arrive after March 1st.

A light wagon with canvas top or hood, for the transportation of the dogs, and a horse to draw the same, will also be required, and the sum of \$400 or so much thereof as may be necessary for the purchase of the same is hereby applied for.

Annual Test of Dairy Cattle.

The third annual test of the dairy cattle of the City and County of Honolulu began on February 1st and will be continued from now on as fast as the work of the Division will permit. The first installment of 1000 doses of tuberculin was received from Washington on February 1st and is now being evaporated to a concentration of one-third of its original volume thereby making

it applicable to the intra-dermal test. This latter method of testing continues to give absolute satisfaction especially since a method has been evolved by this Division for the speedy retest of any questionable reactions. This consists in the injection—intra-dermally—in a fold of skin on the side of the neck of an equal dose of concentrated tuberculin, as that ordinarily injected into the sub-caudal fold. Owing to the thickness of the hide on the side of the neck there is little or no danger of the point of the needle penetrating the cutis, making the injection sub-cutaneous instead of intra-dermal. The neck region, however, is less accessible or convenient for injection under ordinary circumstances and the resulting reaction is less conspicuous, requiring palpitation or even accurate measuring in its interpretation. But where there is the slightest doubt about the result of a sub-caudal injection the neck injection should be resorted to immediately and an examination 48 to 72 hours later will dispel any doubt as to the diagnosis. This was beautifully demonstrated on a high priced Holstein bull recently imported which failed to give a characteristic reaction to the sub-caudal injection even though the local swelling indicated the possible presence of infection. The animal was then injected on the side of the neck and 50 hours later the double fold of the hide at the place of injection had assumed a thickness four times greater than original. This swelling was hardly noticeable so long as the hide was allowed to remain flat on the neck and only became conspicuously manifest when the hide was raised in a fold between the index finger and the thumb. With this neck test to assist in doubtful cases I feel absolutely confident that the intra-dermal form of the tuberculin test may be considered absolutely reliable as a means of diagnosing bovine tuberculosis.

Like in the former general tests the coöperation of the local Board of Supervisors, through the City and County Physician, has been extended through the assignment of Milk Inspector Richards to assist in making the tests. His personal acquaintance with all the milk producers and his intimate knowledge of the composition of the various herds has been of good value to us in carrying on this work.

Glanders.

I regret to report the appearance of glanders in a stable where the disease has been known to occur on previous occasions, but where no case has developed for more than two years. As this recrudescence of the disease after such a long interval is indicative of the presence on the premises of an old "carrier" of the infection—that is, an infected animal exhibiting no symptoms of the disease—it has been decided to test all the animals in the stable as well as such animals which have been in contact with these. This occasion will lend an opportunity to apply a new

method of mallein testing, the ophthalmic test, which in its way is as simple as the intra-dermal test for tuberculosis, but which is considered far more reliable than the old sub-cutaneous method, so much so in fact that it has already been officially adopted by several European governments. If it is proven to be as here there are strong hopes that the mallein testing of horses and mules for export to these islands may be extremely simplified and the objections of dealers and importers to this test be minimized.

Importations of Live Stock.

The approved report of the Assistant Territorial Veterinarian covering the importation of live stock during the month of January, as well as an itemized report on the tuberculin test of cattle is herewith appended.

Very respectfully,

VICTOR A. NORGAARD,
Territorial Veterinarian.

SUPPLEMENTARY REPORT OF VETERINARIAN.

Honolulu, Feb. 12, 1912.

Hon. C. S. Judd, President and Executive Officer, etc.

SIR:—Since finishing and distributing the monthly report of the Division of Animal Industry I have received a copy of the "Proceedings of the American Veterinary Medical Association," pertaining to the meeting held at Toronto, Canada, Aug. 21-24, 1911, where I had the honor to represent the Board as a delegate. The volume, covering more than 700 pages, contains much of interest to this Board, at least in so far as the Division of Animal Industry is concerned, including a paper presented by me on the livestock sanitary conditions in the Territory of Hawaii, which appears under the heading of "Report of Special Committee on Insular Possessions."

The purpose of this addenda is however to show the present status of rabies or hydrophobia in the United States and Canada in so far as the resident secretaries of the Association have reported thereon. It appears that reports were received from 23 resident secretaries, of which twelve only mention rabies, and of these again only two, both from New England states, report the absence of the disease during the past year. This does not indicate that rabies occurred in only ten States, but shows on the contrary, that the disease is on the increase in many localities, and in some cases to an alarming extent. Pennsylvania, for instance, made an appropriation of \$10,000 for the suppression of rabies (1911-1912), an increase of \$5000 over the preceding period

(1909-1910), and a number of other States now supply the anti-rabic treatment free of charge to resident citizens.

From these reports I beg to quote as follows:

Connecticut, p. 117: "No cases of anthrax or rabies have occurred since my last report."

Colorado, p. 119: "Rabies is on the increase and many cases have been reported from the laboratories of the state college and the university. No restrictions have been placed on dogs, save in one or two of the smaller cities."

District of Columbia, p. 121: "Rabies still occupies a prominent position upon the public stage. An almost continuous muzzling order has been in effect, but the hoped for results have not been obtained on account of the flagrant disregard by the police in general, of the enforcement of this order."

Georgia, p. 123: "Hydrophobia: This has increased alarmingly in the last year. The state health board distributes free the Pasteur treatment."

Massachusetts, p. 123: "During the year 1910 there were one hundred and fifty-four cases of rabies reported killed or died, a decrease of ninety-nine."

Michigan, p. 126: "On the optimistic side I am glad to say that so far as can be learned, Michigan is comparatively free from any serious contagious diseases. A few reports of *rabies*, *glanders* and *hog cholera* though not prevalent."

New York, p. 133: "New York has suffered during the past two or three years from a severe epizootic of rabies, but its progress has been noticeably checked by quarantining known infected areas and muzzling or confining dogs in such localities, in addition to the capture and destruction of such canines as are running loose and unmuzzled in violation of the law. Rabies at different periods during the past two years has appeared in twenty-nine counties in this state, one hundred and three townships, fifteen cities and eight villages."

Oregon, p. 139: "An epidemic of rabies prevailed in the Wallowa Valley, in a rather isolated section in the northeastern part of the state. No known fatalities occurred among the inhabitants although a number were bitten by rabid animals and received the Pasteur treatment. In most cases where animals were submitted for examination by the state bacteriologist the negri bodies were readily discernible. Coyotes became affected and menaced the entire live stock industry of that district. Sheep and small animals became affected to no slight extent, several thousand animals were exposed, radical measures were instituted and the disease was soon under control although danger still lurks in the presence of the infected roving coyote."

Pennsylvania, p. 143: "Rabies has been entirely too prevalent in this state. Twelve districts have been quarantined, affecting 2,746 animals. Those destroyed numbered 1,101 and 212 persons were reported as having been bitten. At the laboratory of the

state live stock sanitary board five hundred and twenty-seven head of animals were received during 1910, suspected of rabies. Of these four hundred and eight were from dogs, and *three hundred and thirty-five proved to be positive*. The brains of six cats, five horses, six hogs, three human beings, one mule, one sheep, one deer and one goat were examined, with positive results in fifteen out of the twenty-four cases. During the years 1905 to 1909 inclusive, the brains of seven hundred and thirty-one animals were examined with positive results in five hundred and fifty-six cases. These figures do not include any experimental animals."

Vermont, p. 153: "No cases of rabies have ever been reported in Vermont."

Wisconsin, p. 155: "Rabies:—There was a marked increase in the number of cases reported during the last year."

Wyoming, p. 156: "An outbreak of rabies occurred in the vicinity of Cheyenne during which two persons were bitten by rabid dogs, but prompt submission to the Pasteur treatment prevented any loss of life. Laboratory examination of suspected cases demonstrated the existence of the disease, which, followed by a city muzzling ordinance checked any further occurrence."

United States in General, p. 163: "Rabies continues to spread and is now found in nearly every part of the United States. In some localities it is suppressed by effective muzzling ordinances with destruction of all unmuzzled dogs found on the highways. The disease has not been so prevalent in most of the states in the western third of the United States as during the year previous but in the central states the condition has been more serious.

"There is a laboratory in Kansas City in which anti-rabic vaccine is prepared and sent out, not only for the purpose of vaccinating against rabies in persons, but also in animals. The price for the course of the treatment in persons is fifty dollars and in animals twenty-five dollars. A dose is sent each day. This laboratory is in charge of Dr. V. Nisbet. There may be other laboratories doing the same."

Canada, p. 164: "A few cases of rabies have existed in southwestern Ontario during the past six months but the disease may be considered under control. No cases have appeared in other sections of Canada."

In regard to the intra-dermal method of tuberculin testing the following is quoted from the report of the Committee on Diseases:

"Dr. D. F. Luckey, state veterinarian of Missouri, is giving the intra-dermal test in cattle a practical test in his state work. The following is an abstract from a recent letter which I give with his permission: 'We begun the use of the intradermal test January last. We attempted to verify the results with subcutaneous test and further by post-mortem examinations. We had occasion to give this test a severe trial around Columbia and I am glad to report that it appears to be a decided success, especially, during the summer months. I believe the intra-dermal test will

prove more reliable than the subcutaneous tests. We have not hesitated to condemn cattle upon this test alone. Its accuracy depends largely upon the care in making the injection. We found that unless extreme care was used, the injection would not be properly made. In any animal with a bad history we injected both caudal folds. Age, pregnancy, recent parturition, excitement and weather conditions seemed to cut no figure with the test. Using it the veterinarian can do his work in daylight and does not have to wade about in filthy barns during the night. In making the tests around Columbia our men would ride all day, stop at different places, making the injections, and tagging the cattle. Anywhere from forty-eight hours to four or five days thereafter (usually on the second day) a re-examination of the same cattle is made with a view to recording the results of the injections. A little swelling sometimes follows from the insertion of the needle, but usually disappeared by the end of forty-eight hours. The swelling as a result of tuberculin reaction is usually well marked by that time and persists for about a week. As far as our observations have gone, there is a little uneasiness and switching of the tail noticed in tuberculous animals, beginning a few hours after the injection. There is exfoliation of the epithelium as the reaction disappears.'"

From the January number of the American Veterinary Review it appears that the Chief of the Bureau of Animal Industry has carried out the promised experiments with the intra-dermal test, as follows:

"The morning following * * * held in store for the visiting veterinarians * * * the inspection at the stock yards of about 140 head of cattle that had previously been tested under the direction of Dr. Mohler with the ophthalmic and intra-dermal methods,—a golden opportunity for studying the relative value of the two tests in question, and also their relative value as compared with the present (subcutaneous) tuberculin test." Unfortunately the results are not given in this number, but I have communicated with Dr. Mohler and asked for an advance copy of the report on the subject. Another paper, entitled, "The Newer Methods of Tuberculin Testing," by Dr. K. F. Meyer, director of the Pennsylvania Live Stock Sanitary Laboratory, has also been sent for.

Very respectfully,

VICTOR A. NORGAARD,
Territorial Veterinarian.

FORESTRY AT THE SUGAR PLANTERS' MEETING.

At the annual meeting of the Hawaiian Sugar Planters' Association, held in Honolulu, December 4 to 7, 1911, more than usual attention was paid to the subject of forestry. On December 5, the chairman of the Committee on Forestry, Mr. Albert Horner, of Kukaiau, Hawaii, presented a report calling on the Association to take definite action in forest matters and recommending that certain specific projects be given the moral and financial support of the Association. These recommendations were later embodied in a resolution, which was unanimously adopted.

Mr. Ralph S. Hosmer, Territorial Forester, also addressed the meeting, emphasizing further the points brought out in Mr. Horner's report. As usual the report of the Committee on Forestry was distributed in printed form at the time of the meeting. Following are the remarks of Mr. Hosmer and the resolution adopted by the Association:

Members of the Hawaiian Sugar Planters' Association.

Mr. President and Gentlemen:—Arguments in favor of forestry and statements of reasons why such work ought to be done in Hawaii have been made so often before this Association that the subject is one familiar to you all. I do not come here today to re-thrash the old straw. But there are certain things that for the good of the Territory must continue to be said until the public sentiment that unquestionably exists here is crystalized into definite and positive action.

No speakers could ask for a more appreciative audience than is this association but, gentlemen, what is needed now is no longer mere polite attention and the formal approval of recommendations. It is high time that every plantation here represented should, in the terms of the street, "get busy" with forest work, and that at once.

The sole reason why this demand can be made here is that such work will pay. The plantation companies are long term corporations. They should and can afford to look well into the future. By the practise of forestry they will benefit themselves in many particulars.

This whole matter is purely a business proposition. The only excuse for the existence of forestry at all is that it is good business to use part of the land for raising trees. That it is good business so to do is proved by the experience of many nations, ancient and modern, so that indeed the degree to which forestry is practised has become a sort of yard stick by which the relative advancement of nations can be measured.

Here in Hawaii as elsewhere, wood and water are at the foundation of all our prosperity. We have given much attention of late to the right use of water, and properly so. Mr. Martin, the hydrographer, by dropping his current meter into your ditches

has given some of you figures that have set you thinking as to how to stop the leaks. But gentlemen, if you do not take adequate care of the forests that cover your water sheds it will take a very much more complex instrument than a current meter to record the alternate periods of flood and drought that in time are bound to follow the opening up of the protective cover.

Some plantations are of course already doing much in the way of forestry: others might very well do more. Especially ought there to be more and better coöperation between the plantations and the government in the protection of the native forests. It may be replied that it is the duty of the government to protect the forests. So it is. But here at once comes in the question of money, for the government cannot do work without funds any more than can the individual, and up to this time funds in adequate measure have not been provided for forest work.

A possible solution of this difficulty lies, I think, in the proposal that has recently again been brought forward, that the money now received from water revenues from forest reserves be used by the Government for forest work, instead of as at present going into the Territorial Treasury as a part of the general receipts of the Land Office. By turning this money that comes from the forest, back into the forest, the foundations can be laid of a self-supporting, revenue-producing forest system that in time will be one of the most important assets of the Territory. I urge upon the members of this Association that they use their influence to have brought about this adjustment of revenues.

If anyone wants to be primed with an argument, the reasons for this request are these: the continuance of the native forests on the water sheds in *good condition*, is essential to the maintenance of the local water supply. Our forests when exposed to grazing and trespass quickly become unhealthy and subject to destruction by insects and disease. The remedy is to maintain the forests in their original condition, or where it is necessary, to bring them back to that state. Essentially this means fencing and the removal of all live stock, followed where this may be required by the planting of blanks and open areas. This is work in which the Government and the plantation should coöperate, because on the right use of our waters, lands and forests, depends the prosperity of these Islands.

The second main need in forestry in Hawaii is tree planting on waste land. This is especially and immediately important on the sugar plantations because of the increasing cost of fuel, not to speak of other wood supplies. In view of what has been said so many times in former years, it is not necessary before this Association to enlarge on the advantage of having on each plantation groves of trees as a local source of wood supply. I desire merely to remind you that the offers of the Board of Agriculture and Forestry are still open: (1) to furnish advice as to what, where and how to plant, and (2) to supply at cost price seed-

lings of forest trees in quantity, ready for transplanting. By this method the plantations which for any reason prefer not to maintain forest nurseries of their own, are relieved of the trouble of getting the seedlings started, and also of much of the danger of loss, for the little trees, here offered, are not sent out from Honolulu until the danger from the "damping-off fungus" is past. As the Division of Forestry is decidedly limited in its equipment, it is advisable that orders for trees be placed some months in advance, otherwise it may not be able to supply the seedlings at the date required. It takes about six weeks to get eucalypts ready; two months for ironwood. The seedlings are sent out in boxes holding from 800-1000 each. The price per box, f. o. b. the wharf at Honolulu, is \$1.00 per thousand.

It is a very encouraging sign that during the past year tree planting has received a decided impetus in Hawaii, especially in the way of shelter belts for exposed cane fields and in groves for the production of fuel wood. But it is only a small part of what yearly ought to be done until enough forest plantations have been started to yield annually as much wood as is used on the several plantations.

Tree planting is a good investment—one of which the returns can be measured directly in dollars and cents. One of the best things about tree planting is that in this way there can be utilized land fit for no other purpose. For wind breaks near the sea ironwood has shown itself the tree to be used. For quick returns in fuel and wood production one of the eucalypts is usually the species to be recommended. In this connection I would remind the members of this Association that a few months since the Division of Forestry issued a bulletin on *Eucalyptus Culture* in Hawaii by Mr. Louis Margolin of the U. S. Forest Service, Mr. Margolin having been detailed to Hawaii upon special request to assist in this study. The bulletin is based on a careful investigation of all the available sources of information about eucalyptus in Hawaii. The Division of Forestry will be glad to send copies to anyone upon application. It will repay all plantation men to give this report careful reading.

In Hawaii it is impossible for anyone who has to do with the management of affairs not to be concerned with what has come to be termed The Conservation Program—the right use of lands, waters and forests. But as the whole conservation movement grew out of forestry, which must always remain one of its most important parts, so locally there is at the present time no way in which Conservation can be practised better than through forest work. My final word is that for the sugar plantation companies this means protecting the native forests and planting trees.

RESOLUTION ADOPTED BY THE HAWAIIAN SUGAR PLANTERS' ASSOCIATION AT ITS MEETING DECEMBER 6, 1911.

Whereas the subject of forestry is one of the most important

with which the sugar planters of Hawaii have to deal, because
 (1) of the close relation between forests and water supply and
 (2) of the constantly increasing need for local supplies of fuel
 and other wood, and

Whereas what is needed now is no longer mere approval but definite action, therefore, be it

Resolved, that it is the sense of the Hawaiian Sugar Planters' Association that the Trustees be requested to take definite and if possible favorable action, through a special committee or otherwise, on the recommendations contained in the report of the Committee on Forestry for 1911, to-wit:

(1) That there be introduced into Hawaii insect eating birds, such as shall have been approved by competent authorities as being beneficial.

(2) That financial assistance in the way of providing additional equipment be given by the Association to the Territorial Division of Forestry for its work of growing tree seedlings in large numbers for the use of those, especially sugar plantation companies, doing extensive forest planting.

(3) That it be brought forcibly to the attention of each plantation that it is the judgment of this Association that for their own interest and strictly from a business standpoint, the individual plantations ought to pay greater attention to tree planting and also to protecting the native forest by fencing in the areas from which the plantation draws its water supply.

Resolved Further, that this Association approves the adoption by the Territory as its definite policy, of the suggestion that as far as practicable the revenues derived by the Government from leases or licenses of waters flowing from the forest reserves be used for forest work; and that the Trustees be requested so to recommend to the appropriate Territorial officials.

FICUS STIPULATA.

(From Tropical Agriculturist.)

Ficus stipulata, better known horticulturally as *F. repens* (sometimes called "Mauritius Ivy"), is perhaps the best substitute we have in the tropics for the English ivy, which forms so delightful an adornment to gardens and country houses in Europe and other cool countries. In the tropics, where the ivy does not flourish, the want of a good wall creeper is often felt. Few walls, either of bungalows, estate buildings, churches, etc., which would not be greatly improved in appearance by the growth of a suitable creeper. This want is suitably supplied by the plant *Ficus repens*, as may be seen in the accompanying illustration, better perhaps than by any other tropical plant known. The plant thrives equally well at all elevations, from sea level to 6000 feet,—an uncommon quality which specially commends it to favor. It is

easily propagated from small cuttings of the rooting stems, and these have only to be inserted in ordinary light soil where they are intended to grow permanently. This should be done in wet weather, otherwise the cuttings must be kept shaded and watered frequently until they strike root, which may be known by the appearance of fresh growth. In a short time it spreads over the available surface, and it may be said to be seen at its best just before it completely covers the wall. Afterward it should be occasionally trimmed with a hedge shears, clipping off any straggling ends of branches, etc.

This plant is remarkable from the fact that although a perfect creeper, it belongs to a genus which is usually characterized by large trees or shrubs. Familiar examples of the family are the fig (*Ficus carica*), the Banyan, and the Rambong rubber trees—*Ficus bengalensis* and *Ficus elastica*, respectively.

Ficus repens occasionally bears an abundance of fig-like hard green fruits, which are not edible. The plant is considered to be a native of China and Japan, but is very similar to, if not identical with, *Ficus Thwaitesii* of Ceylon.

H. F. MACMILLAN.

NOTES ON SOME HONOLULU PALMS.—II.

VAUGHAN MACCAUGHEY—The College of Hawaii.

The Palmettos—Sabal.

There are seven groups of genera of palms indigenous to the continental United States, comprising ten species. Of these seven genera, the most widely known are,—the Silver Palms (*Thrinax*), the California Palms (*Washingtonia*), the Royal Palms (*Roystonea*), and the Palmettos (*Sabal*).

The name "palmetto" is of Spanish origin, being a modification of the word *palmito*, which is diminutive of *palma*, and means "a little palm." A number of the Sabals are quite small, with stems hidden below the soil, and to these the name may appropriately be applied. Any name, however, which is indicative of small stature, can scarcely be applied to the whole genus, for the best known species attain considerable size, having trunks several feet in diameter and thirty to sixty feet in height. Although unsuitable, the name palmetto is widely used, and will doubtless persist. The origin of the name Sabal is not fully known; it may possibly be one of the native names for the palmettos in South America.

The palmettos were originally confined strictly to the Ameri-



Fig. 1.
PALMETTO—Yard of W. E. Rowell. (Note arrangement of leaf bases).



Fig. 2.
PALMETTO—Government Nurseries.

PHOTO BY ROCK

cas, and were unknown to any part of the Old World. They were distributed naturally from the Bermuda Islands and the South Atlantic and Gulf States of North America through the West Indies to Venezuela and Mexico. It is of interest to know that the Cabbage Palmetto is the northernmost species of all the palms. The Sabals are now planted as ornamentals throughout many tropic and sub-tropic countries. Several kinds have been planted in Honolulu, and though not rare, they are by no means as common as some of the other palms.

The palmettos that are chiefly used for ornamental plantings are,—the Dwarf Palmetto (*Sabal Adansoni*), *S. mauritiaeforme*; the Cabbage Palmetto (*S. Palmetto*); Blackburn's Palmetto (*S. Blackburnianum*); the Mexican Palmetto (*S. Mexicanum*). The second and third of these have been most commonly planted in the Honolulu region. These five species may be distinguished by means of the following key, which has been adapted from Bailey's Cyclopedia of American Horticulture,—

- A. Leaf-blade longer than petiole.
 - B. Trunk none, the rosette of leaves springing directly from the ground.....*S. Adansoni*
 - BB. Trunk of considerable height, finally attaining 60 feet*S. mauritiaeforme*
- AA. Leaf-blade shorter than petiole.
 - B. Leaf-blade heart-shaped in outline.....*S. Palmetto*
 - BB. Leaf-blade orbicular in outline.
 - C. Divisions of leaf rather rigid. *S. Blackburnianum*
 - CC. Divisions of leaf pendant.....*S. Mexicanum*

The notes that follow relate chiefly to the Cabbage Palmetto, but in many respects apply to the palmettos in general.

As was indicated in the discussion of the name "palmetto," there are two distinct types of Sabal,—(1) small, "stemless" species whose short trunks are buried in the ground; (2) species with stout, columnar trunks. The kinds planted in Honolulu belong largely to this latter class. The stem is covered with a reddish-brown rind, but this usually entirely hidden by the peculiar and characteristic arrangement of petioles.

The leaves of the petioles, like those of the majority of palms, are tough and leathery, and their stalks or petioles are proportionately hard and woody. These tough petioles are persistent—that is, they do not drop from the trunk as do those, for example, of the Royal Palm. The leaves of the Royal Palm, when they have attained maturity, fall off entirely, leaving a smooth, ring-like scar. The leaves of the palmettos, like those of the date palm, persist for a long time. Finally the dead and withered leaf-blade drops away, leaving the petiole attached to the stem. The broad, concave bases of the petioles are gradually split open by the steady enlargement of the growing stem. This causes a



Fig. 3.
YOUNG PALMETTO--Keeaumoku Street



Fig. 4.

PORTION OF TRUNK OF PALMETTO SHOWING "BASKET WORK."

natural interlacing of the leaf-bases, and gives the trunk the peculiar appearance of being encased in a kind of regular basket-work (see Fig. —). This unique *cheveux de frise* remains upon the trunk until the latter has attained the height of ten or twenty feet. (See Figs. 1, 3, 4.)

The underground portion of the stem is scarcely less interesting. It consists of a short, pointed, knob-like stem surrounded by a dense mass of contorted roots, this mass often being 4 to 5 feet in diameter and 5 to 6 feet deep. From it tough, light-orange-colored roots, often nearly half an inch in diameter, penetrate the soil for a distance of 15 to 20 feet. According to Seemann, "the roots contain a considerable quantity of tannin."

The wood is light, soft, pale-brown, with numerous hard fibro-vascular bundles. The outer rim is about two inches thick, and is much lighter and softer than the interior. The inner pithy portion of young trees is starchy and edible. In the Southern States the trunks are used, because of their great durability for wharf-piles. Polished cross-sections of the stem sometimes serve for the tops of small tables. The wood is largely manufactured into canes. Pieces of the spongy bark and stem are sometimes used as a substitute for scrubbing brushes.

Palms may be grouped in two classes, dependent upon the shape of the leaf,—feather-shaped or pinnate, including the date palm, royal palm, wine palm, and others; fan-shaped or palmate, including the silver palm, Hawaiian palms, and others. The palmettos belong to this latter group. The stout stem is surmounted by a crown of fan-shaped spreading leaves (see Figs. 1, 2). They are at first upright, then spreading nearly at right angles with the stem, and finally pendulous. The leaves are dark, lustrous green in color, and tough and leathery in texture. The blade is 5 to 6 feet long and 7 to 8 feet broad. It is divided into many narrow, long-pointed, parted segments or lobes. Each segment is folded at the base. The margins of these segments are often fringed with long threads. The midrib extends nearly to the center of the leaf. The petiole is 6 to 7 feet long, and has at its base a shining, chestnut-brown sheath of strong fibers (see Fig. 5).

The Cabbage Palmetto grows, as do all palms, from a large central, terminal bud. This bud is the "cabbage" of the palm, and because of its succulence and tenderness is cooked and eaten as a vegetable. The removal of this growing point of course kills the tree. Coarse hats, mats, and baskets are made from the light-colored immature leaves. From the sheaths of young leaves are obtained the bristles for certain kinds of scrubbing brushes (see Fig. 3). The mature leaves are sometimes used as thatch.

The flowering branches emerge from among the leaves. They are 2 to 2½ feet long, with many slender, incurved branches. These branches are profusely covered with small yellowish, or

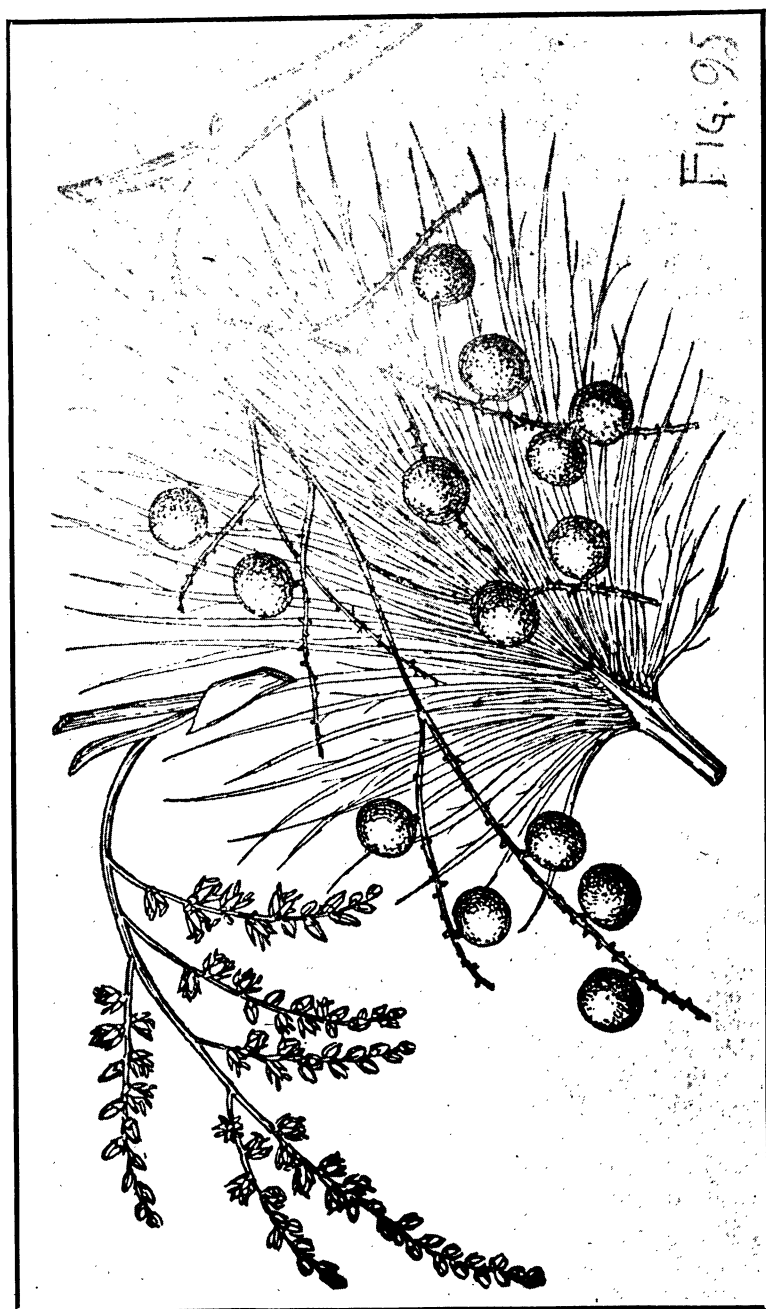


Fig. 5.
LEAF, FLOWERS AND FRUITS OF CABBAGE PALMETTO. (From Sargent's "Manual of the Trees of North America.")

greenish flowers. The fruit is a small, round, black, short-stemmed berry, about one-third of an inch in diameter. The flesh is thin, sweet, and dry; in its center is a single light-brown seed, about one-fourth inch broad (see Fig. 5).

In Florida, according to Rogers, "palmetto scrub is the bane of hunters, surveyors, and others who are obliged to go on foot through regions covered with the tough young growth of these trees."

Concerning the proper treatment of the palmetto, Mr. H. Nehrling, an authority on this group, writes in the *Cyclopedia of American Horticulture* as follows: "All the species that form trunks are objects of great beauty when well-grown. They need to be well fertilized, or the lower leaves will suffer and finally die, thus detracting much from the elegance of the specimen. They all grow naturally in rich black soil * * * they can hardly be fertilized too much, and the more nitrogeneous manure and water they get the faster they grow. When transplanted they must be set deep. * * * Make a hollow about 6 feet in diameter and about 2 feet deep in the center."

The Sabals are suitable for planting as individuals, in groups, and along small roadways. Their small stature and slow growth makes them unsuitable for ordinary street planting. These palms should have a more extended recognition by those interested in ornamental planting in Honolulu and Hawaii.

DUBOIS ON RUBBER.

James T. DuBois, recently United States Consul-General at Singapore and at present Minister to Colombia, is enthusiastic over the Philippine Islands as a future field for rubber production. A recent interview published in the *New York Sun* credits him with stating that the Philippine Islands south of the tenth parallel are as well suited to rubber culture as the Malay Peninsula. "I believe it the best in the world for the cultivation of rubber. In two months nearly a million rubber seeds were sent from our consulate to the Philippines, and in my opinion someday rubber is going to be one of the greatest assets of the islands." The big rubber territory of the Philippines covers Mindanao, Basilan, the Taw-Tawi group, Palawan, and Jolo, the home of the Sultan of Sulu.—*Mindanao (P. I.) Herald*.

BY AUTHORITY.

RULE XIII.

RULE AND REGULATION OF THE BOARD OF COMMISSIONERS OF AGRICULTURE AND FORESTRY CONCERNING THE CON- TROL OF THE PLANT PEST THIMBLEBERRY IN THE TER- RITORY OF HAWAII.

The Board of Commissioners of Agriculture and Forestry hereby make the following rule and regulation:

SECTION 1. For the purpose of controlling and as far as possible of preventing the further spread of Thimbleberry (*Rubus jamaicensis*), called also Olaa Raspberry, and Hitchcock Berry, a plant introduced into this Territory at a point near Hilo, Hawaii, and now known to be established on various parts of the Island of Hawaii and in the Koolau and Hana Districts, Maui, which by reason of its habits of growth and ease of propagation has become in certain parts of the Territory a serious pest, especially on grazing land, all persons and corporations are hereby prohibited from carrying or shipping any plant, root, cutting, fruit or seed of the said Thimbleberry from one Island of the Territory to any other Island; *Provided, however*, that shipments of such Thimbleberry plants which are infected with a fungus disease may be made by duly authorized agents of the Board of Agriculture and Forestry for the purpose of inoculating healthy Thimbleberry plants with said disease.

SECTION 2. For the purpose of eradicating and preventing the spread of the *Rubus jamaicensis*, inspectors and other duly appointed agents of the Board of Agriculture and Forestry are hereby empowered to enter at all reasonable times any and all premises throughout the Territory where the Thimbleberry is known or believed to be growing, and such agents are also hereby empowered, if plants of Thimbleberry are found thereon, to seize and remove the same and to have them destroyed.

SECTION 3. Any person or corporation violating the above rule shall be guilty of a misdemeanor, and shall be punished by a fine not to exceed Five Hundred Dollars, as provided by Section 390 of the Revised Laws of Hawaii as amended by Act 82 of the Session Laws of 1905, and Act 112 of the Session Laws of 1907.

SECTION 4. This regulation shall take effect from and after the approval thereof by the Governor.

APPROVED:

W. F. FREAR,
Governor of Hawaii.

Honolulu, Territory of Hawaii,
January 31, 1912.

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PUBLICATIONS FOR DISTRIBUTION.

Any one or all of the publications listed below (except those marked *) will be sent to residents of this Territory, free, upon application to Mailing Clerk, P. O. Box 207, Honolulu.

BOARD.

Report of the Commissioner of Agriculture and Forestry for 1900; 66 pp.
Report of the Commissioner of Agriculture and Forestry for 1902; 88 pp.
* First Report of the Board of Commissioners of Agriculture and Forestry, from July 1, 1903, to December 31, 1904; 170 pp.
Second Report of the Board of Commissioners of Agriculture and Forestry, for the year ending December 31, 1905; 240 pp.; 8 plates; 10 text figures.
Third Report of the Board of Commissioners of Agriculture and Forestry, for the year ending December 31, 1906; 212 pp.; 3 plates; 4 maps; 7 text figures.
Fourth Report of the Board of Commissioners of Agriculture and Forestry, for the calendar year ending December 31, 1907; 202 pp.; 7 plates.
Fifth Report of the Board of Commissioners of Agriculture and Forestry, for the calendar year ending December 31, 1908; 218 pp.; 34 plates.
Report of the Board of Commissioners of Agriculture and Forestry, for the biennial period ending December 31, 1910; 240 pp.; 45 plates.
"Notice to Importers," by H. E. Cooper; 4 pp.; 1908.
"Digest of the Statutes Relating to Importation, Soils, Plants, Fruits, Vegetables, etc., into the Territory of Hawaii." General Circular No. 1; 6 pp.

PUBLICATIONS FOR DISTRIBUTION—Continued.

- "Important Notice to Ship Owners, Fruit Importers and Others. Rules and Regulations Prohibiting the Introduction of Certain Pests and Animals into the Territory of Hawaii." General Circular No. 2; 3 pp.; 1904.
- "Law and Regulations, Importation and Inspection of Honey Bees and Honey." General Circular No. 3; 7 pp.; 1908.

"The Hawaiian Forester and Agriculturist," a monthly magazine. Vols. I to VII; 1904-1910. To be obtained from the Hawaiian Gazette Co., Honolulu. Price \$1 a year.

DIVISION OF FORESTRY.

- * "Forest and Ornamental Tree Seed for Sale at Government Nursery." Press Bulletin No. 1; 3 pp.; 1905.
- * "Suggestions in Regard to the Arbor Day Tree Planting Contest." Press Bulletin No. 2; 7 pp.; 1905.
- "An Offer of Practical Assistance to Tree Planters." Circular No. 1; 6 pp.; 1905.
- "Revised List of Forest and Ornamental Tree Seed for Sale at the Government Nursery." Press Bulletin No. 3; 4 pp.; 1906.
- * "Instructions for Propagating and Planting Forest Trees." Press Bulletin No. 4; 4 pp.; 1906.
- "Instructions for Planting Forest, Shade and Ornamental Trees." Press Bulletin No. 5; 7 pp.; 1909.
- "Na Hoakaka no ke Kanu Ana i na Laau Malumalu ame na Laau Hoohiwahiwa." Press Bulletin No. 6; 8 pp.; 1909.
- "Eucalyptus Culture in Hawaii," by Louis Margolin. Bulletin No. 1; 88 pp.; 12 plates; 1911.
- Report of the Division of Forestry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 77 pp.; 5 plates.
- * Report of the Division of Forestry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 123 pp.; 4 maps.
- Report of the Division of Forestry, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 70 pp.
- Report of the Division of Forestry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 85 pp.
- Report of the Division of Forestry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 86 pp.; 22 plates.

DIVISION ON ENTOMOLOGY.

- "The Leaf-Hopper of the Sugar Cane," by R. C. L. Perkins. Bulletin No. 1; 38 pp.; 1908.
- ** "A Catalogue of the Hemipterous Family Aleyrodidae," by G. W. Kirkaldy, and "Aleyrodidae of Hawaii and Fiji with Descriptions of New Species," by Jacob Kotinsky. Bulletin No. 2; 102 pp.; 1 plate; 1907.
- * "On Some Diseases of Cane Specially Considered in Relation to the Leaf-Hopper Pest and to the Stripping of Cane," by R. C. L. Perkins. Press Bulletin No. 1; 4 pp.; 1904.
- "A Circular of Information," by Jacob Kotinsky. Circular No. 1; 8 pp.; 1905.
- "The Japanese Beetle Fungus," by Jacob Kotinsky and Bro. M. Newell. Circular No. 2; 4 pp., cut; 1905.
- Rule VII: "Concerning the Prevention of Distribution of the Mediterranean Fruit Fly"; unnumbered leaflet; 1910.
- Rule VIII: "Concerning the Importation of all Banana Fruit, Banana Shoots or Plants"; unnumbered leaflet; 1911.
- Report of the Division of Entomology, for the year ending December 31, 1905. Reprint from Second Report of the Board; 68 pp.; 3 plates; 10 text figures.
- Report of the Division of Entomology, for the year ending December 31, 1906. Reprint from Third Report of the Board; 25 pp.; 7 text figures.
- Report of the Division of Entomology, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 18 pp.; 1 plate.
- Report of the Division of Entomology, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 26 pp.; 2 plates.
- Report of the Division of Entomology, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 70 pp.; 10 plates.

DIVISION OF ANIMAL INDUSTRY.

- * "Inspection of Imported Live Stock." Rule 1; 1 p.; 1905.
- * "Inspection and Testing of Imported Live Stock for Glanders and Tuberculosis." Rule 2; 1 p.; 1905.
- * "Concerning Glandered Horse Stock in the Territory." Rule 3; 1 p.; 1905.
- * "To Amend Rule 1, Inspection of Imported Live Stock." Rule 4; 1 p.; 1907.
- * "Quarantine of Horse Stock from California." Rule 8; 1 p.; 1908.
- "Rules and Regulations, Inspection and Testing of Live Stock." Rules and Laws; 11 pp.; unnumbered pamphlet; Revised 1910.
- Report of the Division of Animal Industry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 62 pp.
- Report of the Division of Animal Industry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 41 pp.; 3 plates.
- Report of the Division of Animal Industry, for the year ending December 31, 1907. Reprint from the Fourth Report of the Board; 104 pp.; 6 plates.
- Report of the Division of Animal Industry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 44 pp.
- Report of the Division of Animal Industry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 59 pp.; 12 plates.